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UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,621	01/22/2004	Andrew Hadley	03-0023	5052

24319   7590   01/30/2007
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EXAMINER
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ART UNIT	PAPER NUMBER
2114	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>29 November 2006</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>12 and 14-21</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>12 and 14-21</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>22 January 2004</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some *   c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

2.   **Claims 12, 17-19, 21 rejected under 35 U.S.C. 102(b) as being anticipated by**

US 5623499 to Ko et al.

3.   Referring to claim 12, Ko discloses creating a first state; creating a second state;

building a state machine from the first and second states (Figure 1, Figure 3, 210, 220,

Figures 4-8, Figure 10.),

the state machine being capable of executing at least one function (From line 35

of column 3, "The EFSM has a finite number of states and changes from one state to

another when an input or stimulus is applied to the machine. A state is defined as a

stable condition in which the EFSM rests until the next stimulus or input is applied.

Each state transition may also cause the EFSM to update context variables or internal

variables, and/or generate observable outputs which may be based on the context

variables. The particular final state of an EFSM transition upon receipt of an input or

stimulus may be dependent on the current EFSM state, the value of the input

parameters, and the current value of context variables or internal variables."),

the at least one function being implemented in code common to multiple

parameters (From the abstract, with emphasis, "**A** method and apparatus for generating

a conformance test data sequence of minimal length to verify that a device conforms to

a protocol entity which can be characterized by a simplified extended finite state

machine. **The** method generates an expanded directed graph of the protocol wherein

each state is represented by a state vertex and a dummy vertex which are connected to

other similar state and dummy vertices by directed edges in a configuration

corresponding to the operation of the machine."),

wherein the at least one function includes at least one of the group consisting of

editing, storing, loading, and displaying (For example, from the abstract, "The generated

conformance test data sequence exhaustively tests the values in the test data set, and

achieves an efficiency in conformance testing by minimizing the amount of time required

to perform the conformance test.").

4.   Referring to claim 17, Ko discloses a look up table for storing default values of

the multiple parameters (From the abstract, "The directed edges are then assigned

traversal numbers corresponding to the minimum number of times a respective directed

edge need be traversed in order to test values in a predetermined test data set." Table

1.).

5.·   Referring to claim 18, Ko discloses a look up table for providing type and value

information for each of the multiple parameters (From line 6 of column 6, "After the

expanded directed graph of the simplified EFSM is generated in step 220, a suitable

test data set corresponding to the simplified EFSM is retrieved in step 230. A test data

set is a set of input parameters which must be applied, and output parameters which

must be evaluated for conformance testing of a device. The particular values of the

input parameters and output parameters in the test data set may be specified by

designers or conformance testers of the protocol entity. The test data set facilitates the

exercise of a state transition several times with different values of the same input and

output parameter that may be required to verify that the operation of a device exactly

conforms to the protocol entity. For example, consider a transition ##EQU1## which

takes an input parameter "phno", changes from a state S.sub.1 to a state S.sub.2, and

produces an output parameter "status". Values of the output parameter status are

`invalid`, `local`, `domestic` or `international` depending on the value of the input

parameter "phno". The test data set for such a transition may be given in the form of

the following input-output table 1." From line 57 of column 11, "A parameter is

considered independent from another parameter if it may take on any value in its

permitted range without affecting the constraints on the value of the other input

parameter.").

6.   Referring to claim 19, Ko discloses the type and value information includes a

range of values that are permitted for each of the multiple parameters (From line 57 of

column 11, "A parameter is considered independent from another parameter if it may

take on any value in its permitted range without affecting the constraints on the value of

the other input parameter.").

7.   Referring to claim 21, Ko discloses at least one of the multiple parameters is

independent of type (From line 53 of column 11, "If the parameters a and b are

independent, then the traversal number assigned to the directed edge is the maximum

number of values that either a or b must be tested according to the test data set listed

above. A parameter is considered independent from another parameter if it may take on

any value in its permitted range without affecting the constraints on the value of the

other input parameter. According to the test data set the parameter a must be tested

with the values 0, 5 and 9 and the parameter b must be tested with the values 1 and 4.

There is no indication in the test data set or in the simplified EFSM 5 of FIG. 1 that the

parameters a and b are dependent on one another. Thus, the traversal number

$T.sub.1,111$ is assigned a value 3, as indicated by a label 317 in FIG. 4, because it is

the maximum number either parameter a or b must be evaluated with during

conformance testing. However, if the parameters a and b were not independent then the

corresponding traversal number needs to be changed accordingly. In such an instance,

the traversal number $T.sub.1,11$ must be assigned a value equal to the greater of the

sum of the dependent parameter combinations or the maximum number any one of the

parameters needs to be tested according to the test data sequence. For instance, if the

parameters a and b were not independent upon each other then the directed edge 315

may have to be traversed with particular combinations of the parameters a and b.").

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

9.   **Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over US**

5623499 to Ko et al. as applied to claim 12 above, and further in view of US

20030093608 to Jaramillo et al. Referring to claim 14, although Ko does not

specifically disclose the multiple parameters include a PCI cache line size, adjusting a PCI cache line size is known in the art. An example of this is shown by Jaramillo from paragraph 44, "This approach can be implemented by using other multiples or with a programmable multiple, or the standard PCI specification cache line size register can be adjusted such that the PCI to PCI bridge 350 actually prefetches multiple cache lines." A person of ordinary skill in the art at the time of the invention would have been motivated to use PCI cache line size as a parameter because, from paragraph 44 of Jaramillo, "It raises the overall system performance dramatically." Further, such a parameter would have been included for testing because Ko discloses from line 60 of column 15, "Further, although the example EFSM concerned a communications protocol, the present invention may be used for generating conformance test data sequences for any entity that can be characterized by a simplified EFSM." and Ko further discloses from line 10 of column 6, "The particular values of the input parameters and output parameters in the test data set may be specified by designers or conformance testers of the protocol entity. The test data set facilitates the exercise of a state transition several times with different values of the same input and output parameter that may be required to verify that the operation of a device exactly conforms to the protocol entity."

10. **Claim 15 rejected under 35 U.S.C. 103(a) as being unpatentable over US 5623499 to Ko et al. as applied to claim 12 above, and further in view of US 6675244 to Elliot et al.** Referring to claim 15, although Ko does not specifically disclose the multiple parameters include a Small Computer System Interface (SCSI) synchronous rate, adjusting the SCSI system rate is known in the art. An example of

this is shown by Elliot from line 34 of column 7, "The ASRT state 608 is a transitory state in which the timer is loaded with a value suitable for a delay discussed in conjunction with the next state, a WAIT_ASRT state 610. The value loaded into the timer during the ASRT state 608 depends on whether the linear mode is enabled, what the determined SCSI synchronous rate is, and whether this particular clock pulse is being "stretched". These aspects are further discussed below in conjunction with FIGS. 8-12. To summarize, if the linear mode is enabled, the SCSI clock will be asserted for a number of repeater 40 clock cycles that most closely matches the incoming clock signal from the other side of the repeater 40, but with some degree of "snapping" when the rate is near a standard SCSI rate." A person of ordinary skill in the art at the time of the invention would have been motivated to include a SCSI synchronous rate because, as disclosed by Elliot, the rate affects system performance. Further, such a parameter would have been included for testing because Ko discloses from line 60 of column 15, "Further, although the example EFSM concerned a communications protocol, the present invention may be used for generating conformance test data sequences for any entity that can be characterized by a simplified EFSM." and Ko further discloses from line 10 of column 6, "The particular values of the input parameters and output parameters in the test data set may be specified by designers or conformance testers of the protocol entity. The test data set facilitates the exercise of a state transition several times with different values of the same input and output parameter that may be required to verify that the operation of a device exactly conforms to the protocol entity."

11.   **Claim 16 rejected under 35 U.S.C. 103(a) as being unpatentable over US**

5623499 to Ko et al. as applied to claim 12 above, and further in view of "block

size" by Microsoft Computer Dictionary (MSCD). Referring to claim 16, although Ko

does not specifically disclose the multiple parameters include block size, adjusting the

block size is known in the art. An example of this is shown by MSCD, "The declared

size of a block of data transferred internally within a computer, via FTP, or by modem.

The size is usually chosen to make most efficient use of all the hardware devices

involved." A person of ordinary skill in the art at the time of the invention would have

been motivated to include a block size because, as disclosed by MSCD, the block size

affects system performance. Further, such a parameter would have been included for

testing because Ko discloses from line 60 of column 15, "Further, although the example

EFSM concerned a communications protocol, the present invention may be used for

generating conformance test data sequences for any entity that can be characterized by

a simplified EFSM." and Ko further discloses from line 10 of column 6, "The particular

values of the input parameters and output parameters in the test data set may be

specified by designers or conformance testers of the protocol entity. The test data set

facilitates the exercise of a state transition several times with different values of the

same input and output parameter that may be required to verify that the operation of a

device exactly conforms to the protocol entity."

12.   **Claim 20 rejected under 35 U.S.C. 103(a) as being unpatentable over US**

5623499 to Ko et al. as applied to claim 19 above, and further in view of US

6546507 to Coyle et al. Referring to claim 20, Ko discloses that parameters in the test

data set have a range that is stepped through (From line 57 of column 11, "A parameter is considered independent from another parameter if it may take on any value in its permitted range without affecting the constraints on the value of the other input parameter."). Although Ko does not specifically disclose the type and value information includes an incremental step size for each of the multiple parameters, using an incremental step for testing values is known in the art. An example of this is shown by Coyle, from line 46 of column 39, "The method 2850 starts at block 2852, where it verifies that the system operates correctly at a given initial value. The method 2850 in block 2854 tests whether the system passes at that value. If it does not, block 2856 reports a system failure. If the system passes, block 2858 adjusts the initial value to a new value, e.g., a single step up in the value. Block 2862 tests the system at this new value, and, if it passes, block 2862 saves the new value to a variable called HIGHGOOD. Then, method 2850 returns to block 2858 where the value can be again incremented in the same direction. If the test of block 2860 fails, the method 2850 proceeds to block 2864, where it resets the parameter to the initial value. Then, block 2866 tests whether the system passes at this value. If it does not, then block 2868 reports a system failure. If the system passes, block 2872 adjusts the parameter in the opposite direction to that of block 2858, e.g., a single step down. In other words, one of the blocks 2858 and 2872 increments the parameter value to test the operational limit in one direction, while the other decrements that value to test the operational limit in the other direction." A person of ordinary skill in the art at the time of the invention would have been motivated to incrementally step because as disclosed by Coyle, it permits

operational envelope testing, and further as disclosed by Ko, there is a range of values

that need to be tested for a given parameter.

Response to Arguments

13.   Applicant's arguments with respect to claims 12, 14-21 have been considered but

are moot in view of the new ground(s) of rejection. Referring to the previously objected

matter, From MPEP 2131, "When a claim covers several structures or compositions,

either generically or as alternatives, the claim is deemed anticipated if any of the

structures or compositions within the scope of the claim is known in the prior art." Brown

v. 3M, 265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001). Further, from

MPEP 2173.05(h), "Alternative expressions are permitted if they present no uncertainty

or ambiguity with respect to the question of scope or clarity of the claims. One

acceptable form of alternative expression, which is commonly referred to as a Markush

group, recites members as being "selected from the group consisting of A, B and C."

See Ex parte Markush, 1925 C.D. 126 (Comm'r Pat. 1925). Thus it is clear that Markush

groups are claiming something in the alternative, and it is clear that alternatives in

claims are anticipated if any of the alternatives are known in the prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Gabriel L. Chu whose telephone number is (571) 272-

3656. The examiner can normally be reached on weekdays between 8:30 AM and 5:00

PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gabriel L. Chu
Examiner
Art Unit 2114

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